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FM 5-142-1 (TEST)

DEPARTMENT OF THE ARMY FIELD MANUAL

CONSTRUCTION SUPPORT TO FASCOM



HEADQUARTERS, DEPARTMENT OF THE ARMY
MARCH 1967

FOREWORD

This manual provides interim guidance to commanders, staff officers, and other personnel concerned with Engineer support under the TASTA-70 concept of organization and operation. This information can be utilized to facilitate reorganization under the TASTA concept. Firm information on the organizational structure and composition of units will be as contained in TOE's when published. Although the basic TASTA-70 study has been approved by Department of the Army, detailed doctrine contained in this Test Field Manual is under continuing development and review. This test manual will be superseded by FM 5-142, Nondivisional Engineer Combat Units. Readers are encouraged to submit comments and recommendations for changes that will improve the clarity, accuracy, and completeness of the manual. Comments should be constructive in nature and reasons should be provided for each recommendation to insure understanding and to provide a valid basis for evaluation. Each comment should be forwarded directly to the Commanding Officer, U. S. Army Combat Developments Command Engineer Agency, Fort Belvoir, Virginia 22060. An information copy of recommendations that propose changes to approved Army doctrine may be sent, through command channels, to the Commanding General, US Army Combat Developments Command, Fort Belvoir, Virginia 22060, to facilitate review and evaluation.

FIELD MANUAL

No. 5-142-1 (TEST)

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 March 1967

CONSTRUCTION SUPPORT TO FASCOM

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CHAPTER 1

INTRODUCTION

1-1. Purpose

This manual provides guidance for commanders, staff officers, and other personnel concerned with the mission of providing engineer construction and topographic support to the field army support command (FASCOM) and engineer installation support to the field army.

1-2. Scope

This manual describes the mission, capabilities, and operations of the army engineer combat brigade and the corps engineer combat brigade of the field army in their relationship with the FASCOM. It also describes

briefly the missions, capabilities, and operations of the nondivisional engineer combat units habitually found in the combat zone and which are attached to the engineer combat brigades for command and control purposes (for further details regarding these units, see FM 5-1 and FM 5-142). It also discusses briefly the teams of the engineer service organization (TOE 5-500 series) which are assigned to the FASCOM with the mission of providing engineer installation support to the field army. A brief discussion of the field army and the FASCOM are included to enable the reader to relate the engineer combat brigades with the higher, parallel, and lower elements of the FASCOM.

CHAPTER 2

THE FIELD ARMY AND THE FIELD ARMY SUPPORT COMMAND

Section I. THE FIELD ARMY

2-1. Field Army

A type field army normally consists of the major units described in paragraphs 2-2 through 2-8, and which generate the principal requirements for combat service support. All of the units located in the combat zone, including any units not part of field army, are provided combat service support by the FASCOM.

2-2. Corps

Corps headquarters directs the tactical operations of four divisions and nondivisional corps troops. Combat service support is provided by the FASCOM.

2-3. Division

The division is a combined arms organization consisting of combat, combat support, and combat service support units. Direct combat service support is provided by the division support command (DISCOM). Backup direct support and general support are furnished by the FASCOM.

2-4. Separate Brigades

Separate brigades (such as the separate infantry brigade) are combined arms organizations consisting of combat, combat support, and combat service support units. Direct combat service support is provided by the brigade

support battalion. Backup direct support and general support are furnished by the FASCOM.

2-5. Army and Corps Engineer Brigades

Engineer combat support and engineer construction support within the field army are provided by engineer brigades assigned to field army and corps. Combat service support is provided by the FASCOM.

2-6. Army Signal Brigade

Field army communications support is provided by the operational signal units assigned and attached to the signal brigade, field army. Combat service support is furnished by the FASCOM.

2-7. Military Intelligence Battalion

Military intelligence functions, including technical intelligence activities, are performed by the military intelligence battalion of the field army. Combat service support is provided by the FASCOM.

2-8. Other Major Units

Corps and army artillery, air defense units, and other combat and combat support units assigned or attached to the field army, are also provided combat service support by the FASCOM.

Section II. FIELD ARMY SUPPORT COMMAND (FASCOM)

2-9. Mission and Functions

a. *Mission.* The mission of the FASCOM is to provide, within assigned responsibilities,

combat service support to a field army (or other supported forces). The field army support command is also responsible for rear

area security and area damage control for the field army service area.

b. Functions. Functions performed by the FASCOM include—

- (1) Administration.
- (2) Civil affairs.
- (3) Legal services.
- (4) Maintenance.
- (5) Medical service.
- (6) Military police.
- (7) Movements.
- (8) Personnel services.
- (9) Services (including repair and utilities, real estate, and firefighting services).
- (10) Supply.
- (11) Transportation.

2-10. Organization

a. The FASCOM is designed to support a field army composed of a headquarters, a variable number of army and corps combat and combat support nondivisional units, the FASCOM itself, and the nondivisional combat service support units which are assigned to it; and a variable number of corps and

divisions. For planning purposes, the type field army used in this manual is based upon two corps of four divisions each. Provision is made for expanding the type field army to three corps of four divisions each. The organization of a FASCOM in support of an eight division field army is shown in figure 2-1.

b. The FASCOM is normally organized with a headquarters and associated functional control centers (inventory control, movements control and maintenance management). Elements of the FASCOM include—

- (1) Inventory control center.
- (2) Movement control center.
- (3) Maintenance management center.
- (4) An army support brigade.
- (5) Two or three corps support brigades.
- (6) A civil affairs brigade.
- (7) A medical brigade.
- (8) A military police brigade.
- (9) A transportation brigade.

2-11. Command Relationships

The FASCOM has command relationships with the following:

a. Field Army. The FASCOM is a major

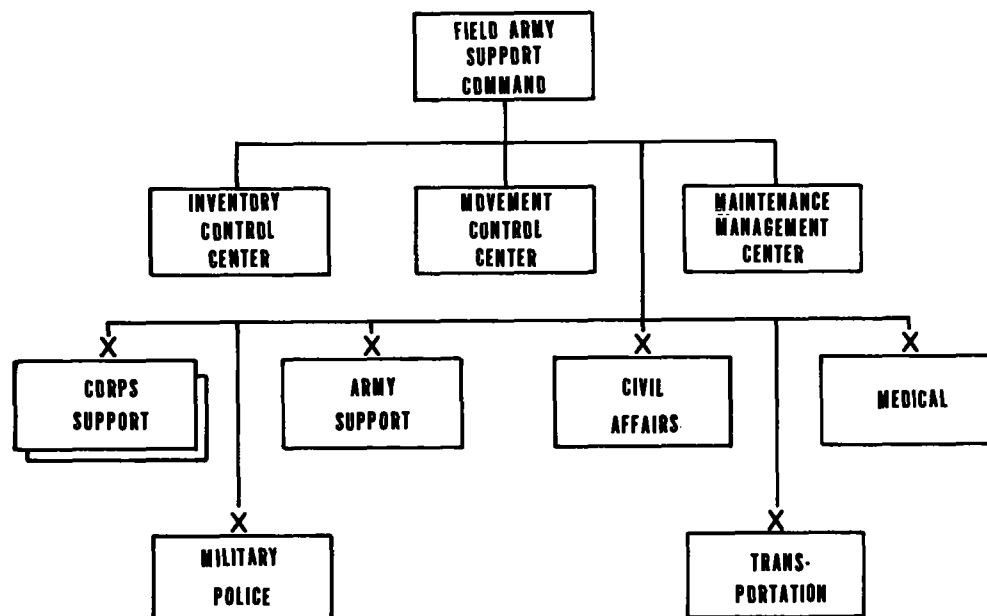


Figure 2-1. Organization chart, FASCOM supporting an eight division field army.

subordinate command of the field army. The field army headquarters makes broad long-range plans for the support of anticipated tactical operations and issues mission type orders to the FASCOM. The FASCOM develops detailed plans, policies, and directives for combat service support in conformance with field army policies, directives, and guidance, and executes assigned missions.

b. *Corps.* The FASCOM is a parallel command to corps. The corps headquarters does not provide combat service support to units in the corps area or to divisions. The FASCOM furnishes this support, maintains coordination with the corps and assists the corps in rear area security and damage control activities.

c. *Supported Divisions and Nondivisional Units.* The FASCOM provides general support level combat service support to the divisions of the corps and direct and general combat service support to all nondivisional units of the field army. "Back-up" direct support is also provided to divisions, when required.

d. *Field Army Engineer and Signal Services.* FASCOM construction and communications requirements are forwarded to field army for approval. Priorities established by field army for these services are the basis for

mission orders to be executed by the engineer and signal units in support of FASCOM.

e. *Theater Army Support Command (TASCOM).* The FASCOM maintains a close working relationship with the TASCOM within field army policies. Functional control centers of FASCOM place requirements upon their counterpart centers in the TASCOM. Coordination of interzonal movements of replacements, units and supplies requires placement of TASCOM liaison personnel at critical control points within the field army.

f. *Other Services, Other National Forces, Host Nations, and Host-Nation Military Organizations.* Within the policies of field army, the FASCOM establishes and maintains necessary working relationships with other services, other national forces, host nations, and host-nation military organizations. Resources and capabilities of these agencies are utilized by the FASCOM to provide combat service support to the field army. Support of these agencies in furtherance of the field army mission may also be required of the FASCOM.

2-12. References

For a detailed discussion of the FASCOM see FM 54-3 and FM 54-4, and the related field manuals (test) listed in appendix A.

CHAPTER 3

ENGINEER UNITS SUPPORTING THE FASCOM

Section I. GENERAL

3-1. General

Engineer support for the FASCOM in the combat zone may be categorized as follows:

- a. Construction and topographic support.
- b. Engineer installation support.

3-2. Engineer Construction and Topographic Support

In the combat zone engineer construction and topographic support is provided by the engineer combat brigades and their subordinate engineer units. In the field army service area this support is provided by the army engineer combat brigade. In the corps area

this support is provided by the corps engineer combat brigade. These brigades and their attached engineer units are discussed in detail in FM 5-1, FM 5-146, and FM 5-162, and briefly in paragraphs 3-4 through 3-13.

3-3. Engineer Installation Support

Engineer installation support consists of real estate, repair and utilities, and firefighting services provided for the field army by FASCOM. These services are provided by teams of the engineer service organization, TOE 5-500, which are attached to, and under the command and control of the FASCOM or its subordinate units. These teams are discussed in paragraphs 3-14 through 3-21.

Section II. ENGINEER COMBAT BRIGADES

3-4. Engineer Combat Brigades

Engineer combat brigades are command and control organizations. They are flexible organizations consisting of a fixed headquarters and headquarters company and become operational upon the assignment or attachment of engineer combat groups, engineer topographic units, and separate engineer companies. They provide engineer combat, construction, and topographic support to the field army. They are habitually located in the combat zone. There are two types, the army engineer combat brigade and the corps engineer combat brigade. Figures 3-1 and 3-2 show the allocation of engineer units in the combat zone.

3-5. Army Engineer Combat Brigade

- a. Each field army is authorized an army engineer combat brigade (TOE 5-101). The

army engineer combat brigade is located in the field army service area. It operates from the field army rear boundary into the corps rear area primarily in support of the corps of the field army. It is also responsible for construction and topographic support required by the FASCOM in the field army service area.

- b. The army engineer combat brigade commands and controls two to four engineer combat groups, an army engineer topographic battalion, and other attached units, and coordinates their activities. The commander of the army engineer combat brigade serves also as the field army engineer. He is represented at field army headquarters by an assistant army engineer who supervises the army engineer section, organic to the army engineer combat brigade, and which is located physically at field army headquarters to provide

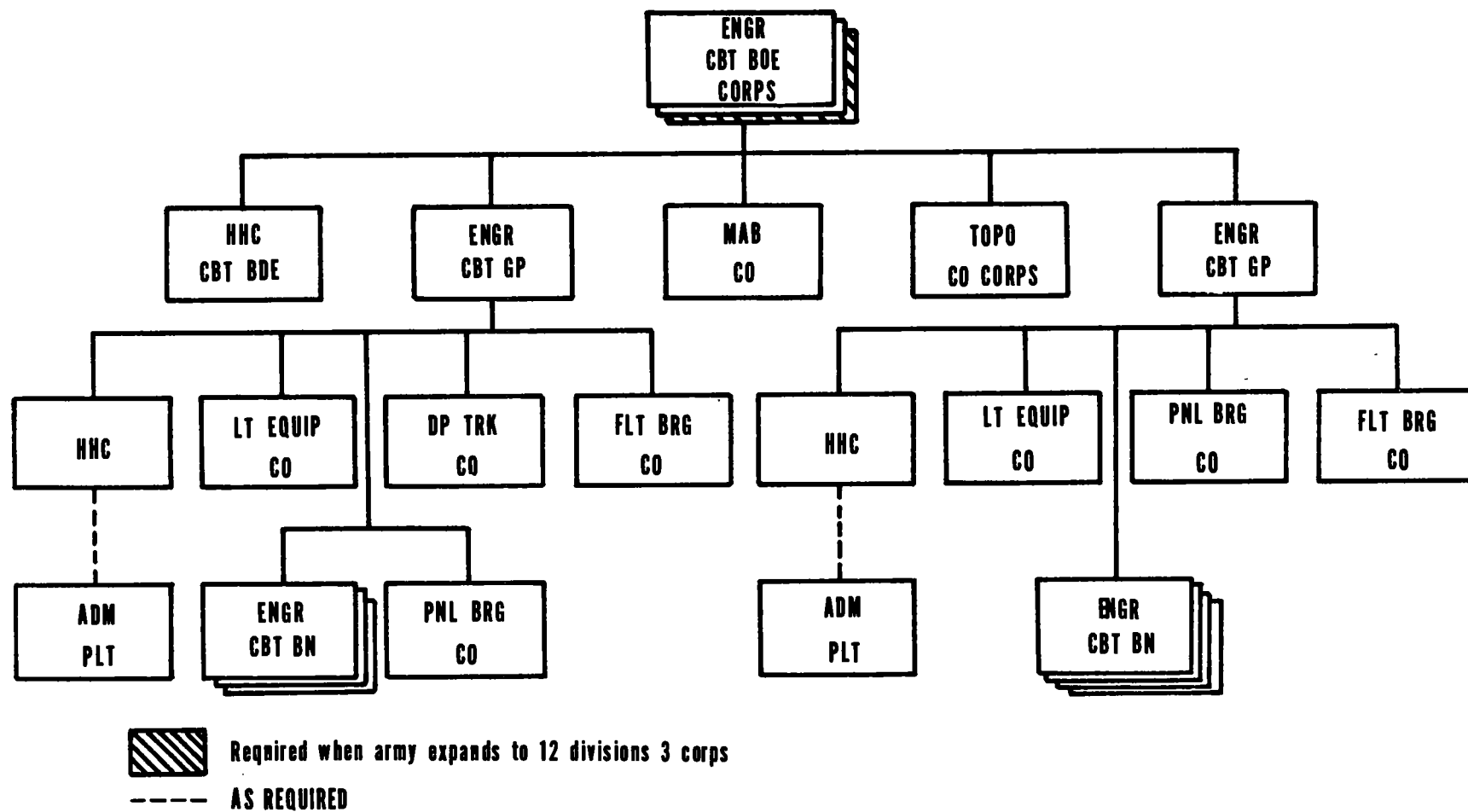


Figure 3-1. Corps engineer combat brigade, 8 and 12 division field army (one per corps).

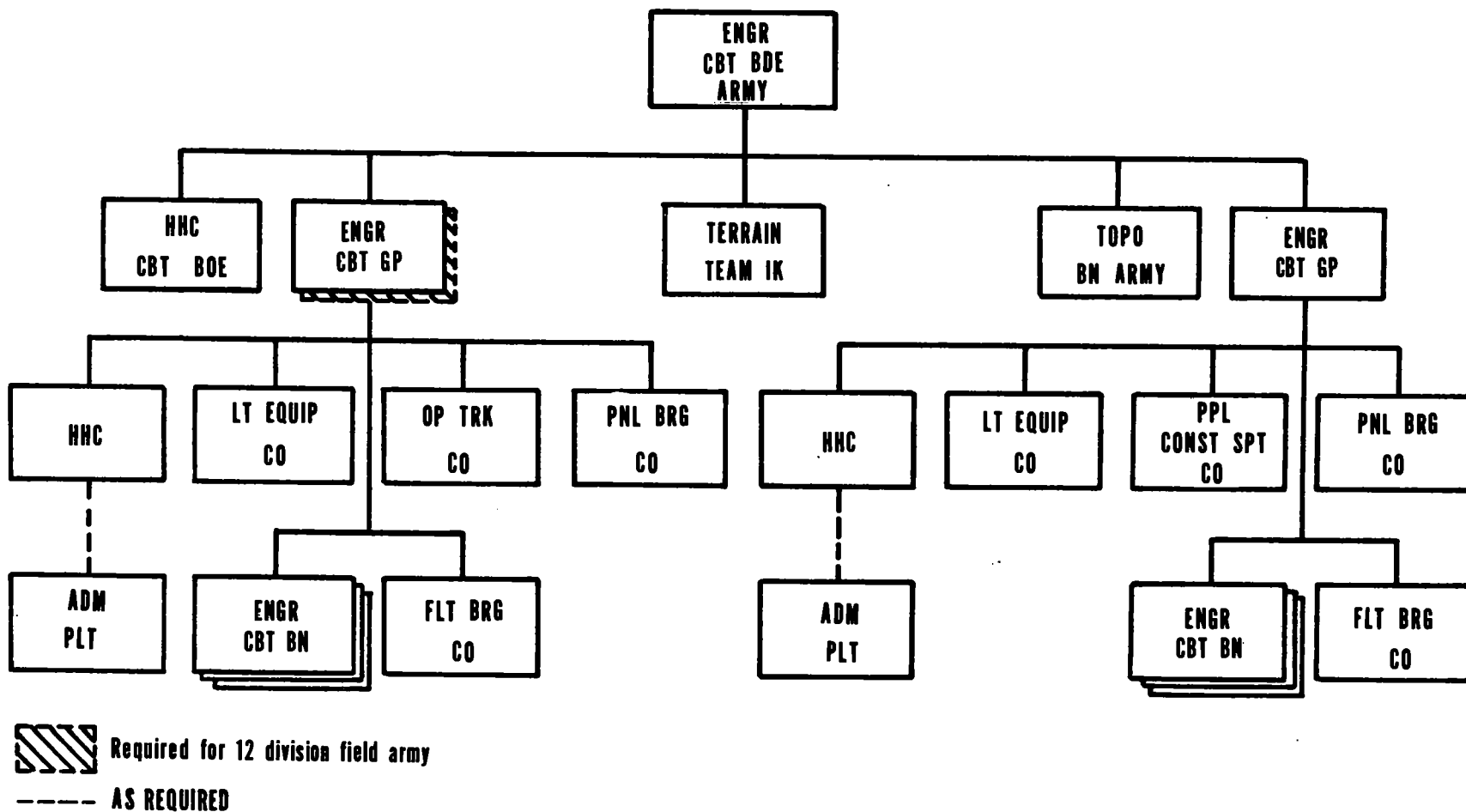


Figure 3-2. Army engineer combat brigade, 8 and 12 division field army (one per army).

engineer planning, advice, and assistance to the field army commander and his staff.

3-6. Corps Engineer Combat Brigade

a. Each of the corps of the field army are authorized an engineer combat brigade (TOE 5-101). The corps engineer combat brigade is located in the corps rear area. It operates from the corps rear boundary into the division areas primarily in support of the divisions. The corps engineer combat brigade is also responsible for construction and topographic support required by the FASCOM in the corps rear area.

b. The corps engineer combat brigade commands and controls two to four engineer combat groups, a corps engineer topographic company, and other attached units, and coordinates their activities. The commander of the corps engineer combat brigade serves also as the corps engineer. He is represented at corps headquarters by an assistant corps engineer who supervises the corps engineer section, organic to the corps engineer combat brigade, and which is physically located at corps headquarters to provide engineer planning, advice, and assistance to the corps commander and his staff.

3-7. Engineer Combat Group

The engineer combat group (TOE 5-52E) is a command organization assigned to the eight division field army on the basis of two groups each per engineer combat brigade. It is a flexible organization consisting of a fixed headquarters and headquarters company to which army or corps engineer combat battalions and separate nondivisional engineer companies are assigned or attached. The mission of headquarters and headquarters company, engineer combat group is to plan and coordinate the operations of assigned or attached engineer units. It normally controls from two to four battalions and an equal number of separate companies (fig. 3-1). (Although the engineer panel bridge company, the engineer float bridge company, and the atomic demolition munitions platoon are part of the engineer combat group, they are normally not involved in construction and topo-

graphic activities and are not discussed in this manual.) The engineer combat group can conduct engineer aerial and ground reconnaissance, and provides routine assistance and supervision of administrative, supply, and maintenance activities of assigned or attached units.

3-8. Engineer Combat Battalion, Army or Corps

The engineer combat battalion, army or corps (TOE 5-35E), is assigned to army or corps and further assigned or attached to an engineer combat group. This unit is capable of performing all engineer combat support missions to include replacing a divisional battalion if necessary. In addition, it is capable of construction, repair, and maintenance of roads, fords, bridges, culverts, landing strips, heliports, command posts, supply and maintenance installations, buildings, structures, and related installations. This unit has 5 water purification units for the production of water for units it is supporting. The battalion has the additional capability to undertake and carry out infantry combat missions when required.

3-9. Engineer Light Equipment Company

The engineer light equipment company (TOE 5-58E) is designed to provide a pool of construction equipment and skilled operators to reinforce the efforts of army or corps engineer combat battalions or to undertake suitable tasks unilaterally. It is normally assigned or attached to an engineer combat group. When employed in a supporting role, the supported unit is responsible for overall worksite supervision and operational control of the supporting elements. The company also has a rock quarrying capability. It can also provide earthmoving and compaction equipment for excavating and grading tasks.

3-10. Engineer Pipeline Construction Support Company

The engineer pipeline construction support company (TOE 5-177E) provides the technically qualified personnel and specialized equipment to assist engineer combat or construction units in the construction and rehabilita-

tion of pipeline and bulk POL storage systems. The unit can also perform these functions with organic means, but at a reduced rate. When operating in the combat zone, it is normally assigned or attached to an engineer combat group.

3-11. Engineer Dump Truck Company

The engineer dump truck company (TOE 5-124E) provides the personnel and equipment to reinforce engineer combat or construction unit capabilities in earthmoving tasks, and in hauling and spreading crushed stone, gravel, or other heavy construction materials. It may also be used to haul panel bridging. It is normally assigned or attached to an engineer combat group.

3-12. Army Engineer Topographic Battalion

The army engineer topographic battalion (TOE 5-305) operates in the field army serv-

ice area, on the basis of one per field army. It is a fixed organization consisting of a headquarters and headquarters company, a photomapping company, and a reproduction and distribution company. It provides maps and mapping information; and artillery and missile fire control information for the field army. It provides mapping and topographic support to the units of the FASCOM located in the field army service area, as required.

3-13. Corps Engineer Topographic Company

The corps engineer topographic company (TOE 5-327) is a separate engineer company. It is habitually located in the corps rear area. It provides maps and mapping information, and artillery and missile fire control for field army units in the corps area. It provides mapping and topographic support to units of the FASCOM located in the corps rear area, as required.

Section III. ENGINEER UNITS PROVIDING ENGINEER INSTALLATIONS SUPPORT

3-14. General

Repair and utilities, real estate and firefighting services are provided by teams of the engineer service organization, TOE 5-500. These teams are assigned or attached to, and under the command and control of, the support groups of the corps and army support brigades of the FASCOM. They provide engineer installation support to those installations of the field army, as required. The teams normally required to provide engineer installation support for the field army are described briefly in paragraphs 3-15 through 3-20.

3-15. Team HC, Utilities

a. Capability. Utilities Team HC provides for the maintenance of utilities at installations with a population of up to 2,500 individuals; provides post engineer type service to overseas or theater of operations installations; and maintains utilities service and repair, including refrigeration maintenance.

b. Basis of Allocation. Utilities Team HC is normally allocated on the basis of one per overseas camp, base, depot, or installation with a population of up to 2,500 individuals.

c. Strength. 1 Off 2 NCO 28 EM
31 Agg

d. Category. III

e. Mobility. 30 percent

3-16. Team HD, Utilities

a. Capability. Utilities Team HD provides personnel and equipment for the maintenance of utilities at installations of from 2,500 to 4,000 individuals; provides post engineer type service in overseas or theater of operations installations; and maintains utilities and furnishes utilities service and repair, including refrigeration maintenance.

b. Basis of Allocation. Utilities Team HD is normally assigned on the basis of one per overseas camp, base, depot, or installation having a population of from 2,500 to 4,000 individuals.

c. Strength. 1 Off 1 WO 3 NCO
47 EM 52 Agg

d. Category. III

e. Mobility. 70 percent

3-17. Team FA, Firefighting Headquarters

a. Capability. Firefighting Headquarters Team FA plans for overall area fire protection, establishes organized fire defense, and controls assigned or attached firefighting teams.

b. Basis of Allocation. Firefighting Headquarters Team FA is normally assigned on the basis of one per two to four firefighting teams and one water tank team.

c. Strength. 1 Off 2 NCO 1 EM
4 Agg

d. Category. II

e. Mobility. 100 percent

3-18. Team FB, Fire Truck

a. Capability. Fire Truck Team FB provides fire protection and implements fire prevention program for areas housing 5,000 to 10,000 troops, or warehouses and open stockpile having a storage capacity of 100,000 square feet.

b. Basis of Allocation. Fire Truck Team FB is normally assigned on the basis of one per post, base, camp, or station housing 5,000 to 10,000 troops, or warehouses and open storage area of 100,000 square feet.

c. Strength. 2 NCO 4 EM 6 Agg

d. Category. II

e. Mobility. 100 percent

3-19. Team FC, Water Truck

a. Capability. Water Truck Team FC transports water for firefighting purposes when insufficient water is available.

b. Basis of Allocation. Water Truck Team FC is normally assigned on the basis of one per firefighting headquarters. Additional teams are assigned on an as-required basis.

c. Strength. 2 EM 2 Agg

d. Category. II

e. Mobility. 100 percent

3-20. Team FD, Brush Fire Truck

a. Capability. Brush Fire Truck Team FD, when augmented by personnel with hand tools, furnishes protection against grass or brush fires within the assigned area of operation and can also be utilized to a limited degree to fight structural fires.

b. Basis of Allocation. One per post, base, camp, or station housing up to 5,000 troops, or warehouses and open storage areas of 100,000 square feet.

c. Strength. 2 EM 2 Agg

d. Category. II

e. Mobility. 100 percent

3-21. Team HH, Real Estate

a. Capability. Real Estate Team HH provides qualified personnel for surveying, inventorying, and recording the location, extent, and the condition of real property required or occupied by army forces. When augmented by appropriate technical specialists, it can inventory and record installed and personal property located in private, public, commercial and industrial structures, and facilities, to include railway and other transportation systems.

b. Basis of Allocation. Real Estate Team HH is normally assigned on the basis of one per field army support command, logistical command, or area command as required.

c. Strength. 5 OFF 3 NCO 8 EM
16 Agg

d. Category. III

e. Mobility. 100 percent.

CHAPTER 4

ENGINEER SUPPORT OPERATIONS IN THE COMBAT ZONE

Section I. GENERAL

4-1. Engineer Construction and Topographic Support

Engineer construction and topographic support to the FASCOM accounts for only a portion of the total engineer effort required of the engineer combat brigades of the field army in the combat zone. However, the construction and topographic effort required by the FASCOM combat service support activities is a critical part of force operations and the typical engineer combat brigades are structured to provide it. To aid the engineer commander, automatic data processing (ADP) and the engineer functional components system (EFCS) are used to accelerate

planning, design, and logistic support of engineer operations. (See app B for a discussion of the Automatic Data Processing System used, and the EFCS.)

4-2. Engineer Installation Support

Engineer installation support by the FASCOM involving real estate services, repair and utilities, and fire protection, while less extensive in scope than combat zone construction, is equally important to the functioning of supported forces. It is performed by teams of the engineer service organization (TOE 5-500) assigned or attached to, and under the command and control of the FASCOM or its subordinate units.

Section II. ENGINEER CONSTRUCTION AND TOPOGRAPHIC SUPPORT FOR FASCOM

4-3. Engineer Combat Brigades

a. Mission and Capabilities. Engineer construction and topographic support to the FASCOM is provided by the engineer combat brigades assigned to the field army and to the corps of the field army. The mission of these brigades is to command the various engineer units located in the field army service area and the corps areas of the combat zone and to provide engineer support for the field army. These brigades have the following capabilities:

- (1) To provide staff planning and supervision of operations of all assigned and attached units.
- (2) To conduct engineer reconnaissance and supervise the collection, evaluation, and dissemination of engineer intelligence.

- (3) To provide an engineer staff to either an army or corps headquarters as appropriate.
- (4) To plan for the preparation and execution of atomic demolition munitions (ADM).
- (5) To provide rotary wing aircraft in support of command, control, and liaison activities.

b. Type B Unit. The brigades are not adaptable to a Type B organization.

c. Combat Capabilities. Individuals of these brigades can engage in effective, coordinated defense of the unit's area or installation.

d. Additional Support.

- (1) These brigades are dependent upon other supporting army or corps elements for personnel, legal, and medi-

cal services, and communications facilities when requirements exceed organic capability.

- (2) When supported by TOE 5-500 series Team IG, Topographic Planning and Control, these brigades can provide joint topographic planning and control support for an army composed of U.S. and non-U.S. units.

4-4. Command Relationships

a. Higher Commands. The engineer combat brigades are directly commanded by the corps or army headquarters to which they are assigned. The brigade commanders are in each case both commanders and staff officers on the staff of the headquarters to which assigned, and in this dual role are responsible both for staff planning and execution of engineer combat, construction, and topographic support to their respective forces. In the technical staff role, the engineer combat brigade commander routinely provides advice and assistance to the FASCOM. In the operational role, the engineer combat brigades accomplish approved construction projects for the FASCOM.

b. Parallel Commands. The engineer combat brigades maintain close coordination with other commands on operational matters to assure responsive mutual support.

c. Other Commands. The field army engineer (commander of the army engineer combat brigade) coordinates with the ACoS, services and engineering, TASCOT, and with the commander of the engineer command, TASCOT, on matters of construction and topographic support to the field army. This is to insure that field army engineer operations reflect theater policies and programs, and to permit a ready response to combat zone requirements of TASCOT such as intersectional pipelines, railroads, and inland waterways.

4-5. Construction Requirements

Exclusive of the engineer support provided for the tactical forces of the field army engineer combat brigades may be required to accomplish any or all of the following tasks for the FASCOM:

a. Construction or rehabilitation of facilities for administrative use such as headquarters buildings, troop camps, and similar installations.

b. Rehabilitation or new construction of facilities for hospitals and other medical purposes.

c. Construction of heliports at hospitals and major headquarters for medical and command use. These are exclusive of similar installations constructed for tactical purposes and for use in general support.

d. Construction of protective shelters for FASCOM headquarters, and at support brigade headquarters, to minimize interruptions to combat service support activities resulting from enemy attack.

e. Construction of prisoner of war collecting points in corps and army areas for the temporary quartering of PW's, and in the case of the field army, construction of a military stockade for military prisoners.

f. Construction of hardstands for the storage of Classes I, II, and IV materials with covered storage provided under canvas. The latter is erected by using units. In some cases, rehabilitation of existing structures will serve for this purpose.

g. Extension of pipelines and bulk storage for POL into the field army service area with construction forward of the field army rear boundary accomplished by units of the army or corps engineer combat brigades, augmented by engineer pipeline construction support companies.

h. Construction of hardstands for ammunition storage.

i. Construction of open shop hardstands for maintenance facilities. (Covered shops will be in rehabilitated structures or under canvas.)

j. Construction of access roads serving FASCOM installations.

4-6. Procedures and Policies

a. Construction Support. The provision of construction support to the FASCOM is accom-

plished by engineer combat units in the same manner as such support is provided to other units. The corps and army engineer brigades routinely operate in accordance with the engineer support plans based on policies and priorities established by the force commander at each echelon. Such plans incorporate both combat support and support to FASCOM with engineer effort identified and allocated, and completion dates established.

- (1) The FASCOM in preparing the administrative annex to the field army operations plan identifies construction support requirements by time, phase, type, and location. These are extracted by the army engineer for planning purposes and incorporated in the engineer annex to the operations plan. In the staffing process, the field army engineer maintains close coordination with the ACofS, services, FASCOM, to insure that all construction requirements are included and that the necessary engineer effort is available. In implementing field army operations plans, corps engineers establish similar liaison with the corps support brigades of the FASCOM.
- (2) In addition to execution of construction support plans, engineer brigade commanders normally assign subordinate engineer combat groups areas of responsibility for general support. Within these areas, the responsible engineer units have priority tasks assigned. They are also on call for work required to restore damaged facilities to operating condition, and to undertake construction projects within the scope of their general support mission at the request of users in the area. Where there are conflicts between unprogramed construction requested and assigned priorities, resolution is at the lowest command level possible, with the tactical commander having final decision.
- (3) Construction or rehabilitation stand-

ards are as austere as possible while meeting the operational requirement. Maximum use is made of locally procured, salvaged, and engineer produced construction materials in order to reduce logistic effort to the maximum.

- (4) From the standpoint of skills required, it is anticipated that the routine construction of FASCOM supply, maintenance, and service installations, with associated access roads and support facilities, will seldom exceed the skills available to the engineer combat units assigned to corps and army. (This does not mean that there will always be enough engineers to accomplish all desired tasks.) However, in the army service area there may be occasions where tasks are assigned requiring the special skills and heavy construction equipment resources found in engineer construction units. In these instances, arrangements are made between the field army commander and the theater army support command commander for attachment of the required units from the engineer command, TASCOT. The attached units are normally further attached to the army engineer brigade for command and control during their location in the combat zone, reverting to TASCOT control upon completion of the task.

b. Other Combat Engineer Support. Topographic support and water purification support to the FASCOM is provided by the corps and army engineer combat brigades as a part of their general support mission. Topographic support in the field army service area is provided by the army engineer topographic battalion and in the corps area by the corps engineer topographic companies. Water purification support is provided by the army or corps engineer combat battalions, each battalion being capable of providing a maximum of five, normally four, water points in its area of responsibility.

Section III. ENGINEER INSTALLATION SUPPORT FOR THE FIELD ARMY

4-7. Type Engineer Installation Support

a. Engineer installation support for the field army provided by the cellular teams of the engineer service organization (TOE 5-500) assigned or attached to the FASCOM varies in accordance with the operational environments and with the type facilities required and occupied by the supported units. Major head-

quarters and hospitals are the type installations where engineer installation support is most required. These are the units to which the FASCOM must provide utilities support.

b. Table 4-1 typifies utilities functions to be performed for the corps and field army by the engineer teams assigned to the FASCOM.

Table 4-1. Type utilities tasks

Type task	Corps Area				Army Area					Remarks
	Corps Hq	Corps Spt Bde	MASH	Evac Hosp	Army Hq	Army Spt Bde	FASCOM Hq	Evac Hosp	Conv Ctr	
Install, maintain electrical systems.	X	X	X	X	X	X	X	X	X	Team is assisted by TOE powermen.
Alteration and repair to existing structures.	X	X	X	X	X	X	X	X	X	May include tent floors and frames in some instances.
Maintain and operate sanitary systems.	X	X	X	X	X	X	X	X	X	Water systems if available and sewage disposal.
Repair and maintain installation roads, airfields, hard-standing.	X	X	X	X	X	X	X	X	X	These are minor grading, filling, and draining jobs.
Sign painting, erection and maintenance.	X	X			X	X	X			Hqs identification and directional signs.
Packing/crating organizational supplies and materiel.	X	X			X	X	X			Primarily crates and cases for non-standard paraphernalia found in major Hqs.

4-8. Fire Protection

Fire protection requirements are primarily related to maintenance shops, supply storage, and associated structures. The principal fire risk in the field army will be the destruction of stored military supplies and equipment. Other facilities and real estate which may be used by field army forces, including FASCOM, are of secondary concern. Nevertheless, protection of all military facilities from destruction by fire is an important FASCOM mission if operating efficiency is to be maintained.

4-9. Allocation and Assignment

a. Engineer utilities detachments and firefighting platoons are assigned on the basis of comparison of TOE 5-500 capabilities statements to the estimated mission requirements.

In the case of firefighting, the capabilities of the decontamination platoons of the field service companies, (GS), Forward, (MTEL 29-114), and the field service companies, (GS), Army, (MTEL 29-124), were also considered in determining the number of firefighting teams of the engineer service organization (TOE 5-500 series) required. As the decontamination platoons of the field service companies are provided with tank trucks equipped with firefighting guns, they can be used for firefighting. Accordingly, the requirements for firefighting teams of the engineer service organization (TOE 5-500) in the combat zone, was reduced. In the eight division field army, six utilities detachments and six firefighting platoons are assigned as shown in figure 4-1. Utilities detachments of appropriate sizes are

attached to the support groups of the FASCOM at corps and army level. These detachments are designed to work in forward areas on utilities repair and maintenance on an austere basis and to accomplish minor new construction and earthwork, including road and airfield maintenance. Any tasks beyond the capability of these utilities detachments would be accomplished in accordance with the procedures outlined in paragraph 4-6. Firefighting platoons assigned to both corps and army support brigades and in turn, to groups of the brigade are identical in organization. They are composed of teams FA, firefighting headquarters; FB, fire truck; FC, water truck; and FD, brush fire truck.

b. Utilities and firefighting services, integral to the area support command in COMMZ, can best be performed in the combat zone as part of the FASCOM organization. The support brigades with responsibility for storage and issue of supply, and equipment maintenance,

and administrative services are principal users of utilities support and fire protection. Medical service in the combat zone is also a user of this type of engineer support. The principal requirements for utilities support and fire protection outside FASCOM are in corps and army headquarters. Utilities teams attached to the support groups may be further attached to subordinate elements as required. One team, or a part of one team will normally support field army headquarters, and the services of one team will be required by the support brigade headquarters and FASCOM headquarters. In addition to headquarters support missions, the utilities teams may be assigned to support field installations on a periodic basis or in response to work order requests. Firefighting teams will operate under support groups but may be attached to subordinate units with area responsibilities assigned in accordance with the density of supply and maintenance activities. It is

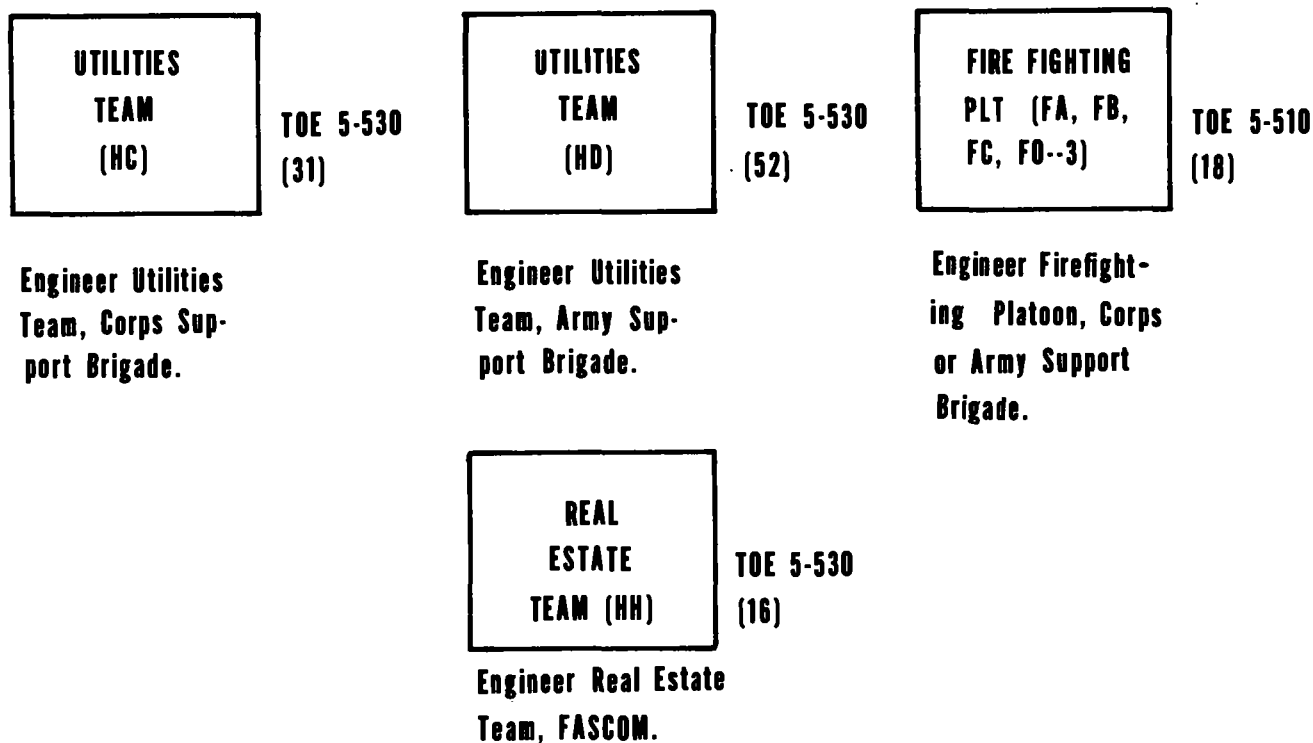


Figure 4-1. Teams of the engineer service organization assigned to the FASCOM.

important that these teams operate under centralized control in order that area responsibilities can be rapidly shifted during times when teams are committed to firefighting operations. Firefighting teams will conduct fire prevention inspections for the command, act as a distribution agency for fire extinguishers, and provide a major capability for FASCOM in area damage control operations.

4-10. Real Estate

The real estate support function is also a part of the FASCOM mission and is performed for FASCOM by an engineer real estate detachment of five officers and eleven enlisted men (fig. 4-1). This detachment, under the direct control of the ACofS, services, FASCOM, will operate throughout the combat zone to acquire, inventory, record, and dispose of real property required by elements of the field army.

APPENDIX A

REFERENCES

FM 3-1 (TEST)	CBR Combat Service Support, TASTA-70.
FM 5-162-1 (TEST)	Engineer Command, TASCOR.
FM 8-16-1 (TEST)	Medical Service, Field Army.
FM 8-17-1 (TEST)	Medical Service, COMMZ.
FM 9-6-1 (TEST)	Ammunition Service.
FM 10-8-1 (TEST)	Airdrop of Supplies and Equipment in Theaters of Operations.
FM 10-67-1 (TEST)	Supply of Petroleum in Theaters of Operations.
FM 12-2-1 (TEST)	AG Functional Support to FASCOM.
FM 14-3-1 (TEST)	Finance Service, TASTA-70.
FM 16-5-1 (TEST)	Chaplain Support, TASTA-70.
FM 19-2-1 (TEST)	Military Police Service, FASCOM.
FM 19-3-1 (TEST)	Military Police Service, TASCOR.
FM 19-45 (TEST)	Rear Area Protection.
FM 27-4 (TEST)	Judge Advocate Support in Theaters of Operations.
FM 29-3-1 (TEST)	Direct Support Supply and Service Operations.
FM 29-6-1 (TEST)	Personnel Command, TASCOR.
FM 29-10-1 (TEST)	The Field Army Supply Management System.
FM 29-11 (TEST)	Cryptologistics Support, TASTA-70.
FM 29-21 (TEST)	Maintenance Support, FASCOM.
FM 29-45-1 (TEST)	General Support Supply and Service Operations in the Field Army.
FM 41-15 (TEST)	Civil Affairs Support, TASTA-70.
FM 54-5-1 (TEST)	Supply and Maintenance Command, TASCOR.
FM 54-6-1 (TEST)	Area Support Command, TASCOR.
FM 54-8 (TEST)	The Administrative Support, Theater Army (TASTA-70).
FM 55-4-1 (TEST)	Transportation Movements in a Theater of Operations.
FM 55-6-1 (TEST)	Transportation Service, TASTA-70.
FM 55-21-1 (TEST)	Transportation Railway Operations.
FM 55-35-1 (TEST)	Motor Transport Operations and Units.
FM 55-46-1 (TEST)	Army Aircraft Transportation Service.
FM 55-50-1 (TEST)	Transportation Amphibious Operations.
FM 55-55-1 (TEST)	Transportation Terminal Operations.
FM 5-1	Engineer Troop Organizations and Operations.
FM 5-142	Nondivisional Engineer Combat Units.
FM 54-3	The Field Army Support Command.
FM 54-4	The Support Brigade.

APPENDIX B

AUTOMATIC DATA PROCESSING SUPPORT FOR ENGINEER COMBAT BRIGADES

B-1. Purpose and Scope

a. Purpose. The purpose of this appendix is to provide information concerning the application of automatic data processing systems (ADPS) to engineer operations in the combat zone. It also describes briefly the engineer functional components system (EFCS) used in conjunction with ADPS in a theater of operations.

b. Scope. This appendix describes current and future ADPS used or to be used by army and corps engineer combat brigades and their subordinate elements in the combat zone of a theater of operation. It describes briefly the current and future facilities, equipment and procedures used in ADPS to aid engineer units to facilitate the planning and decision processes and to simplify logistic support procedures.

B-2. Application of ADP Support to Engineer Operations

Engineer construction planning and supply data for a theater of operations are contained in the Engineer Functional Components Systems (EFCS), TM 5-301, TM 5-302, and TM 5-303. These manuals are available in the army and corps engineer combat brigades down to company level to insure uniformity in planning and executing construction missions in both combat and combat support missions. This system, designed for use with ADPS, is based on standardized construction materials, and estimating procedures. The EFCS provides summarized logistical data necessary in the planning of engineer projects; standardized bills of material tabulated by federal stock number; and standardized construction drawings to be followed in constructing facilities in a theater of operations. The

EFCS can be used at any echelon for engineer planning, operations, and requisition of construction materials with or without ADP assistance. The three manuals constituting the EFCS are described briefly below—

a. TM 5-301, Staff Tables of Engineer Functional Components Systems (EFCS). This manual explains the concept and use of the system and contains tables of the installations, facilities, and equipage in the system. It is of primary interest to logistics planners but all engineer officers should become familiar with it. Separate coding systems for installations, facilities, and equipage are established and explained. This coding permits exploitation of electronic data processing machines and allows for logical expansion and changes in the system. Note that "installation," "facility," and "equipage" have specific meanings when used in the EFCS—meanings different from their usual connotation; defined as follows:

- (1) An installation is a balanced grouping of facilities to be located in the same vicinity, to serve a particular function, such as a 300-bed hospital, a 1,000-man troop camp, an army airfield and heliport to accommodate 25 aircraft, or a 600,000-barrel POL tank farm.
- (2) A facility is a grouping of items and/or sets consisting primarily of construction material in the necessary quantities to provide a specified service such as a 20 by 100-foot building, one mile of 2-lane road, or an airfield control tower.
- (3) An equipage is a grouping of items and/or sets, consisting primarily of nonexpendable construction equipment, designed to provide or augment the equipment necessary for the exe-

cution of specific types of construction units, in a specific world area. For example, equipment is listed for an engineer construction battalion to do railroad construction work in Western Europe.

b. *TM 5-302, Construction in the Theater of Operations.* Of the three manuals that constitute the EFCS, TM 5-302 is the most useful to construction units. It contains site and utility layout drawings; drawings of buildings and other structures; standard and special detail drawings; and simplified bills of materials for many of the structures. The first four digits of a facility code number identify the drawing of that facility as presented in TM 5-302.

c. *TM 5-303, Bills of Materials and Equipment of the EFCS.* This manual contains the complete bill of materials for each facility and the bill of equipment for each equipment in the EFCS. Construction units may use it as a guide for requisitioning. The facility code number identifies the bill of materials for each facility and the equipment code number identifies the bill of equipment for each equipment.

d. *Limitations of the EFCS.* Although the EFCS is an excellent tool and aid for commanders and staff officers of engineer units in a theater of operations, it does have some inherent limitations. Notable among these is the difficulty of adapting the standard structures listed in the EFCS to local sites and the problem of devising acceptable substitutes for certain items of construction material which may be found missing or short in a facility. Thus, whether the EFCS is manual or machine processed, personnel using the EFCS must be aware of these and other limitations.

B-3. Application of ADP to the EFCS

The EFCS, with the exception of drawings, is recorded on magnetic tapes, in the Honeywell 400 computer at the Engineer Data Processing Center, U. S. Army Map Service, OCE. This EFCS data bank is updated quarterly by the Engineer Strategic Studies Group, OCE, in response to changing requirements reported from the field and by new data received from supply and research and development agencies. Additionally, selected components of

EFCS, appropriate to the various theaters, have been provided to the U. S. Army Mobility Equipment Command and the U. S. Army Materiel Command in CONUS and to U. S. Army, Pacific, and U. S. Army, Vietnam. These components were provided on tapes and card decks converted in the case of the U. S. Army Mobility Command for use on the agency's IBM computer. As developed, construction materiel can be requisitioned by a using unit in a theater of operations equipped with, and employing the EFCS code. This procedure, fully automated, interfaces computers between logistical commands in the field with U. S. Army, Pacific, and U. S. Army Mobility Equipment Command, so that at any echelon the EFCS coded requisition can be exploded and be either filled or forwarded. The army and corps engineer combat brigades, upon receipt of I/O devices, enter the theater ADPS through the Tactical Operations (ADP) System, (TOS) which interfaces with the Combat Service Support (ADP) System, (CS₃) as shown in figures B-1 and B-2.

B-4. Construction Support Procedures

a. *General.* Engineer planning for construction support of FASCOM begins before the force is deployed to a theater of operations and is continuous thereafter. Construction materials and equipment are therefore present in the supply system in quantities commensurate with anticipated requirements, and engineer troops are likewise available in the troop list.

b. *Construction Task.* In the combat zone, construction tasks in support of the FASCOM are assigned by the army commander to the army engineer combat brigade or to the corps for further assignment to the corps engineer combat brigade. The assignment order includes the essential elements of what is to be constructed and when and where. The engineer combat brigade assigned the mission, then translates this information tentatively into standard design using the EFCS.

c. *Intelligence Requirement.* The engineer combat brigade requires certain specific intelligence information before confirming or modifying a selected installation design.

- (1) The condition of the site is ascertained to determine size, grade, drainage,

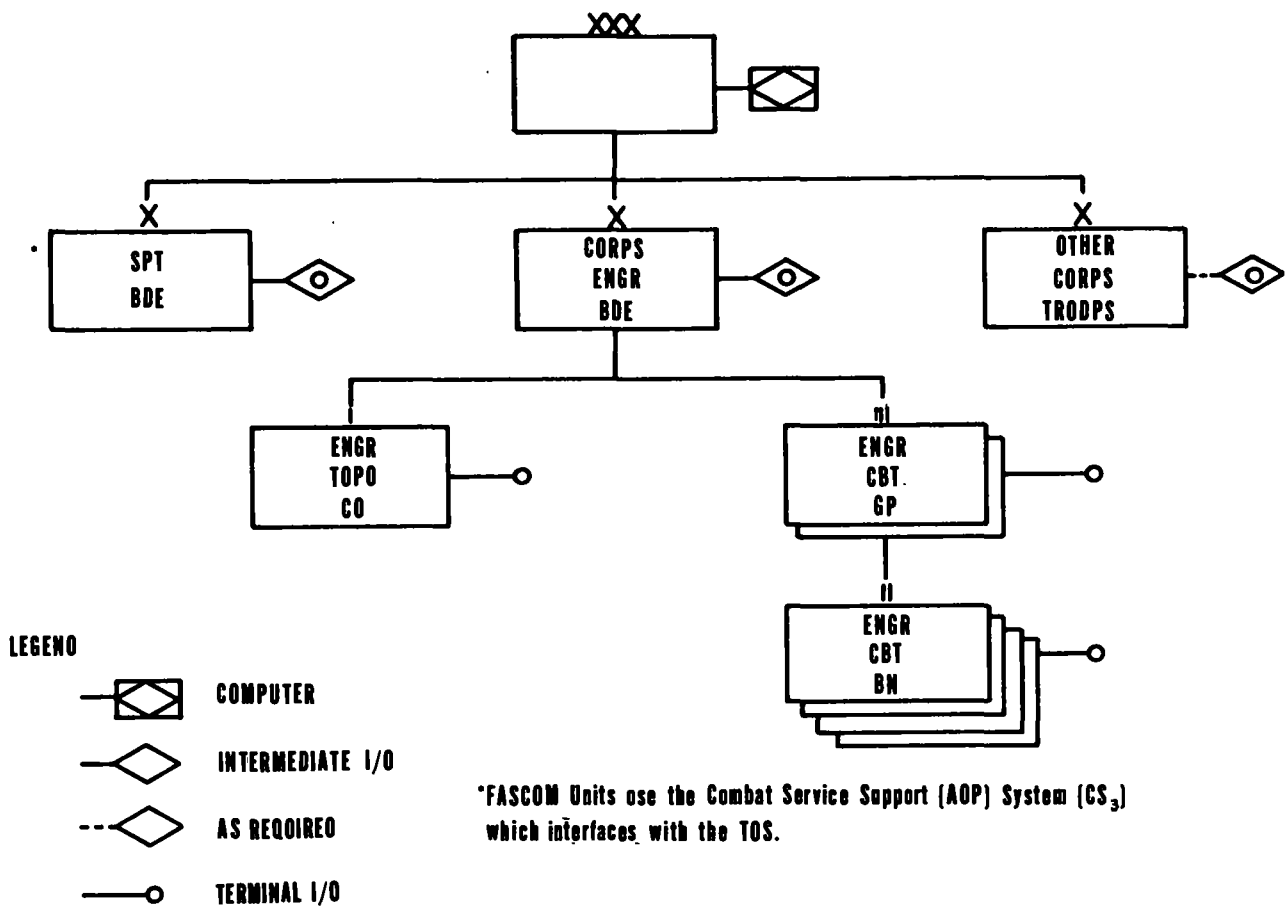


Figure B-1. Automated tactical operations system (TOS), corps engineer combat brigade.

- vegetation, and presence or absence of physical bars to the desired construction.
- (2) Accessibility is determined, particularly in case of the FASCOM installations. Existing roads, railroads, airfields, or proposed sites for such facilities are considered in determining the suitability of the site.
 - (3) The availability of local construction materials, suitable to the installation, is established. In this connection, availability of existing facilities which may satisfy the requirement, in whole or in part, are determined. These factors directly affect the final selection of the installation design.
 - (4) Long range weather forecasts are required. These further affect site and installation selection, and have a direct effect on the assignment of engineer effort.
 - (5) Information as to enemy intentions and capabilities should be known as these factors affect layout and camouflage of the installation.
- d. Operational Information.* In addition to the Intelligence requirement, the engineer combat brigade requires current information as to the operational plans of the supported tactical force, as well as those of the FASCOM, in order to recommend adjustment in construction priorities; standards of construction to be used; and schedule of engineer construction

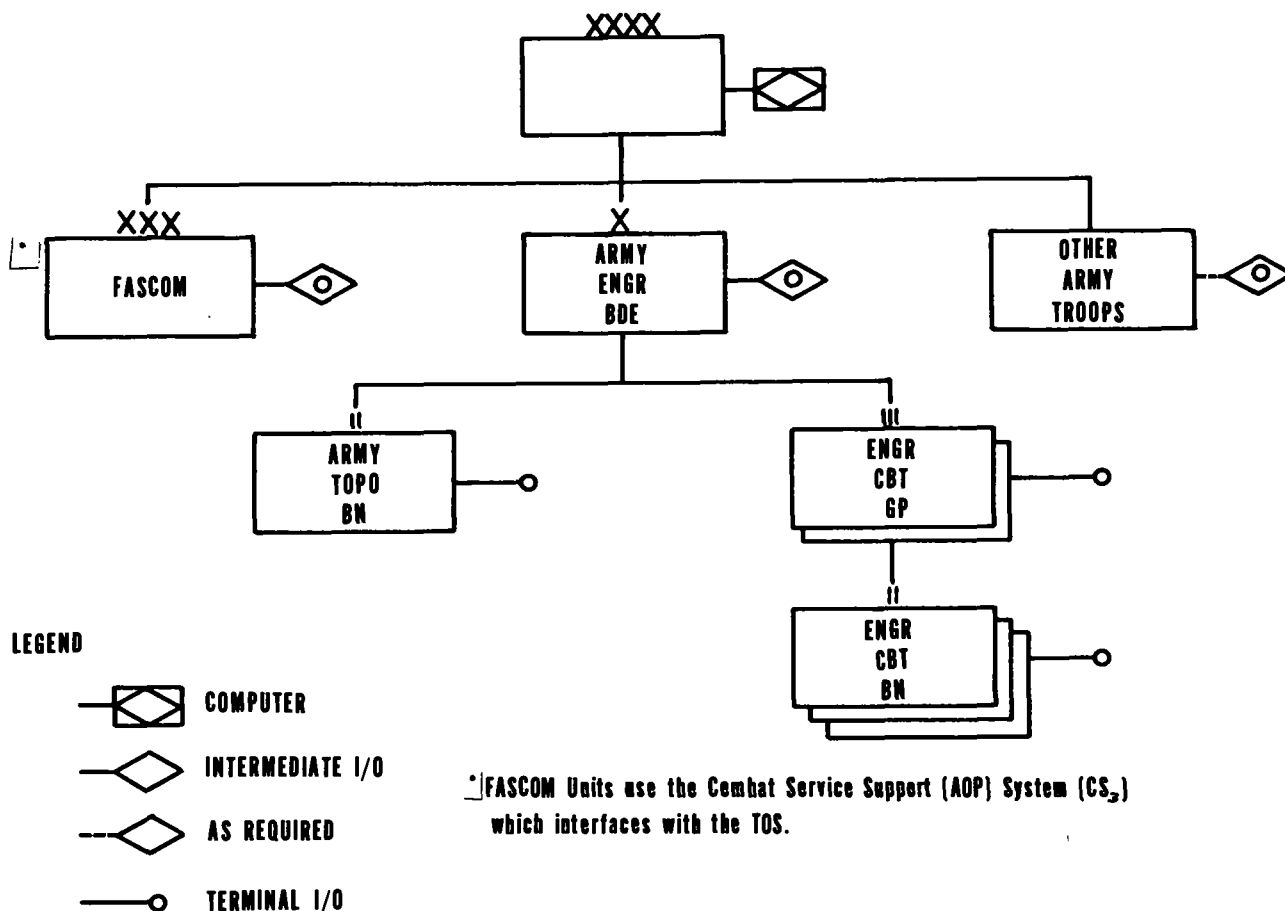


Figure B-2. Automated tactical operations system (TOS), army engineer combat brigade.

effort. From this, an approximate latest starting date for the task is established.

e. Engineer Effort and Materiel. At this point, checks must be made to assure the availability of the necessary engineer effort. Concurrently, checks are made with the FASCOM to determine the availability of the project material. Either or both of these checks can result in changes to the installation design or project schedule.

f. Selection of Engineer Construction Units. With the information previously established, the construction task is assigned to an engineer combat group even though intelligence may still be incomplete. Normally, an engineer combat group having general responsibility for the area in which construction is to take place, is assigned the task.

- (1) Using effort estimates from EFCS, the engineer combat brigade determines the adequacy of the engineer combat group for the construction task. Consideration is given to the reinforcement of the operating unit by personnel and equipment augmentation, when necessary.
- (2) In the interim, the engineer combat group performs reconnaissance to fill in gaps in engineer intelligence and recommends any further modification in design of the installation to suit the site.

B-5. ADPS Requirements

a. General. The engineer combat brigades at field army and corps, when equipped with inter-

mediate and terminal input/output equipment, are provided access to the Tactical Operations System (TOS). The TOS provides the bulk of the intelligence and operational information described in B-4 *c* and *d* and through interface with the Combat Service Support (ADP) System (CS₃), the logistics information required by the FASCOM.

b. Construction. A primary factor in considering automation of the combat zone construction function is the characteristic austerity of the installations to be provided. Engineer design originating in corps or army areas rarely exceeds that associated with simple earthwork. Structures generally are provided from standard sets or by rehabilitation of existing facilities.

- (1) The most common requirement is for information as to the status of Class IV construction supply and equipment. The engineer brigades query the FASCOM as to the availability and delivery data on requisitions. In most instances, these have been submitted through area signal communications channels, using EFCS code numbers. The FASCOM replies may be through interface with the appropriate tactical operations center or through area communications.
- (2) When the engineer construction function is completely automated theater-wide, the army engineer uses the system for intersectional construction projects in the field army service area.

c. ADPS Equipment Distribution. The engineer combat brigades and major subordinate organizations require input/output (I/O) devices to tie in to TOS at corps and army. Engineer groups and battalions must also be capable of tie-in to the division TOS when in sup-

port of division operations. Figures B-1 and B-2 show the distribution of I/O devices in corps and army engineer brigades. Distribution of I/O devices remains the same as shown in the corps engineer combat brigade and the engineer combat group when these elements are operating with an independent corps or division.

d. Interim ADP Requirements. The engineer combat brigades in corps and army are not dependent upon ADPS for combat support operations or construction support to the FASCOM. Until these systems (TOS and CS₃) are present in the field, the engineer combat brigades can function using current planning and communications procedures and techniques.

- (1) Incorporation of appropriate components of the EFCS in existing supply routines will enable these combat units to requisition construction supplies by installation code number or by line number. This simplifies and accelerates the construction supply process and permits a ready phase-in to CS₃.
- (2) Manual systems can be used for acquisition of information and action on information to be provided by TOS. It is recognized that operational planning, using current manual procedures, is comparatively slow; however, engineer current procedures are no slower than will be the general case until the TOS can be implemented.

e. Installations Support. Installation support activities in the combat zone represent relatively small expenditures of engineer effort and materials; thus, no real advantage in applying ADP methods is foreseen, at least at this time.

By Order of the Secretary of the Army:

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